

REMARKS

The Examiner's Action of September 26, 2003 has been received and its contents carefully considered. Reconsideration is respectfully requested in view of the Amendment and the following comments.

Claims 1-9 are currently pending in the instant application. Claim 10 has been cancelled.

I. Allowable Subject Matter

Applicant would like to thank the Examiner for the indication of allowable subject matter in claims 3-7. In view of the argued allowability of claim 1, from which claims 3-7 depend, however, claims 3-7 are being retained as dependent claims in this submission.

II. Objections to the Claims

Claim 10 has been objected to under 37 CFR 1.75(c) as being of improper dependent form. In response, claim 10 has been cancelled. Accordingly, the Examiner is respectfully requested to withdraw his objection under 37 CFR 1.75(c).

III. Rejection under 35 USC 102(e)

Claims 1, 2 and 9-10 have been rejected under Section 102(e) as being anticipated by Bonville. Reconsideration is respectfully requested.

Bonville is directed to a PEM fuel cell system which includes a PEM fuel cell that has an input and output port each for fuel or reformat, process air and coolant. A predetermined fraction of volume of moistened exhaust air leaving the air output port of the fuel cell is diverted back and combined with fresh air at ambient temperature entering the air input port of the PEM fuel cell to maintain water balance in the fuel cell at high ambient operating temperatures. The recycle to air vent ratio is controlled by a processor which adjusts the recycle flow based on the ambient temperature and the power level of the fuel cell. As seen in particular in Bonville's Fig.

1, the PEM fuel cell 12 includes a process air input port 28 communicating with a process air supply line 32 for receiving the process air that is supplied to the fuel cell. The process air exhaust port 30 communicates with an air exhaust line 34 for transporting exhaust process air away from the fuel cell 12. The fuel cell system 10 further includes an airflow splitter or means for diverting a predetermined percentage or fraction of a volume of exhaust process air back to the air input port 28. For example, an airflow valve 44 has an input port 48 that communicates with the exhaust port 30 of the PEM fuel cell 12 for receiving exhaust air, and a first output port 50 for diverting exhaust air along an air cycle recycle line. A mix point 46 receives fresh, ambient air, and further receives the exhaust process air from the air recycle line 52. The mixture of fresh and recycled air is then fed to the air input port 28 of the fuel cell. In addition, in Bonville, the fuel cell includes a fuel input port 20 and a fuel output port 22 which cooperate to supply fuel across anode 14.

Bonville does not disclose a polymer electrolyte fuel cell including a high-temperature portion and a low-temperature portion in a cell plane, where the fuel cell includes an oxidant gas passage formed in the fuel cell, wherein an oxidant gas flow is directed within the oxidant gas passage from the high-temperature portion to the low-temperature portion of the fuel cell, as recited in independent claim 1. In addition, Bonville fails to disclose a fuel gas passage where the fuel outlet is lower than the fuel inlet. There is no indication in Bonville what the actual positioning of the fuel outlet is relative to the fuel inlet when the fuel flow is actually being directed across the anode. Fig. 1 in Bonville merely provides a schematic illustration of a fuel cell system, without disclosing the orientation of the various elements. The features of independent claims 1 and 9 are simply missing from Bonville. Bonville recycles his air outside of the PEM fuel cell. Nothing in Bonville even remotely suggests modifying the system to recycle the air inside the fuel cell. In addition, Bonville does not disclose that the fuel outlet will be lower than the fuel inlet when fuel flows across the anode.

In view of the above, it is submitted that independent claims 1 and 9 are patentable over Bonville. Moreover, it is submitted that dependent claim 2 is likewise patentable over Bonville by virtue of being dependent from independent claim 1, and further for the particular additional features that it recites. The rejection of claim 10 has been mooted by virtue of its cancellation.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw his rejection of the claims under Section 102(e).

IV. Rejection under 35 USC 103(a)

Claim 8 has been rejected under Section 103(a) as being unpatentable over Bonville in view of JP 07-320755 (JP). Reconsideration is respectfully requested.

The disclosure in Bonville is set forth above.

JP discloses a fuel cell where a fuel gas passage groove 40 and an oxidized gas passage groove 50 are provided. The fuel passage groove extends from the high temperature part of the temperature gradient of the cell to the low temperature part.

The Examiner notes that Bonville does not disclose flowing the fuel from the high temperature portion to the low temperature portion. Bonville has been combined with JP to overcome the above deficiency.

However, to the extent that Bonville fails to disclose the features of claim 1 from which claim 8 depends, it is submitted that no reasonable combination of Bonville and JP, assuming arguendo that motivation exists for such a combination, would result in the instant invention as set forth in claim 8. JP does nothing to overcome the deficiencies of Bonville set forth in Section III above.

In view of the above, it is submitted that claim 8 is patentable over Bonville in view of JP. Accordingly, the Examiner is respectfully requested to reconsider and withdraw his rejection of the claims under Section 103(a).

PATENT
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Tatsuya Kawahara, et al.

CONCLUSION

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration, withdrawal of all grounds of rejection and issuance of a Notice of Allowance are solicited.

The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. § 1.16 or § 1.17 to Deposit Account No. 11-0600. The Examiner is invited to contact the undersigned at (202) 220-4296 to discuss any matter regarding this application.

Respectfully submitted,

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